

CHAPTER 6

The One-Dimensional Picture



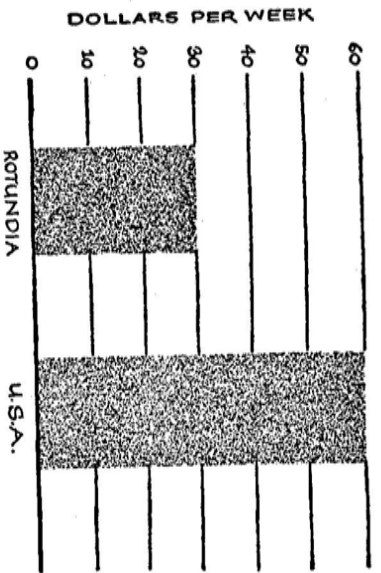
A DECADE or so ago you heard a good deal about the little people, meaning practically all of us. When this began to sound too condescending, we became the common man. Pretty soon that was forgotten too, which was probably just as well. But the little man is still with us. He is the character on the chart.

A chart on which a little man represents a million men, a moneybag or stack of coins a thousand or a billion dollars, an outline of a steer your beef supply for next year, is a pictorial graph. It is a useful device. It has what I am afraid is known as eye-appeal. And it is capable of becoming a fluent, devious, and successful liar.

The daddy of the pictorial chart, or pictograph, is the

ordinary bar chart, a simple and popular method of representing quantities when two or more are to be compared. A bar chart is capable of deceit too. Look with suspicion on any version in which the bars change their widths as well as their lengths while representing a single factor or in which they picture three-dimensional objects the volumes of which are not easy to compare. A truncated bar chart has, and deserves, exactly the same reputation as the truncated line graph we have been talking about. The habitat of the bar chart is the geography book, the corporation statement, and the news magazine. This is true also of its eye-appealing offspring.

Perhaps I wish to show a comparison of two figures—the average weekly wage of carpenters in the United States and Rotundia, let's say. The sums might be \$60 and \$30. I wish to catch your eye with this, so I am not satisfied merely to print the numbers. I make a bar chart. (By the way, if that \$60 figure doesn't square with the huge sum you laid out when your porch needed a new railing last summer, remember that your carpenter may not have done as well every week as he did while working for you. And anyway I didn't say what kind of average I have in mind or how I arrived at it, so it isn't going to get you anywhere to quibble. You see how easy it is to hide behind the most reputable statistic if you don't include any other information with it? You probably guessed I just made this one up for purposes of illustration, but I'll bet you wouldn't have if I'd used \$59.83 instead.)



There it is, with dollars-per-week indicated up the left side. It is a clear and honest picture. Twice as much money is twice as big on the chart and looks it.

The chart lacks that eye-appeal though, doesn't it? I can easily supply that by using something that looks more like money than a bar does: moneybags. One moneybag

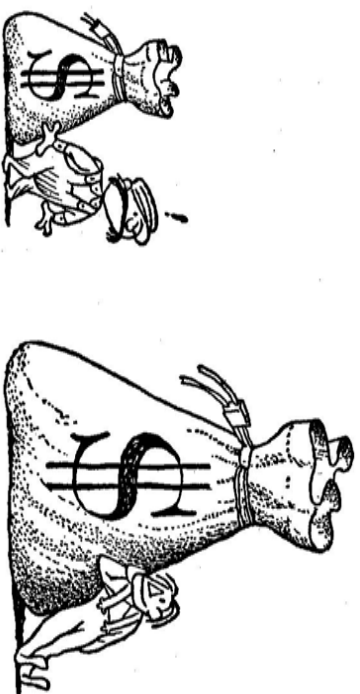


for the unfortunate Rotundian's pittance, two for the American's wage. Or three for the Rotundian, six for the American. Either way, the chart remains honest and clear, and it will not deceive your hasty glance. That is the way an honest pictograph is made.

That would satisfy me if all I wanted was to communicate information. But I want more. I want to say that the American workingman is vastly better off than the Rotun-

dian, and the more I can dramatize the difference between thirty and sixty the better it will be for my argument. To tell the truth (which, of course, is what I am planning not to do), I want you to infer something, to come away with an exaggerated impression, but I don't want to be caught at my tricks. There is a way, and it is one that is being used every day to fool you.

I simply draw a moneybag to represent the Rotundian's thirty dollars, and then I draw another one twice as tall to represent the American's sixty. That's in proportion, isn't it?



Now *that* gives the impression I'm after. The American's wage now dwarfs the foreigner's.

The catch, of course, is this. Because the second bag is twice as high as the first, it is also twice as wide. It occupies not twice but four times as much area on the page. The numbers still say two to one, but the visual impression, which is the dominating one most of the time, says the ratio is four to one. Or worse. Since these are

pictures of objects having in reality three dimensions, the second must also be twice as thick as the first. As your geometry book put it, the volumes of similar solids vary as the cube of any like dimension. Two times two times two is eight. If one moneybag holds \$30, the other, having eight times the volume, must hold not \$60 but \$240.

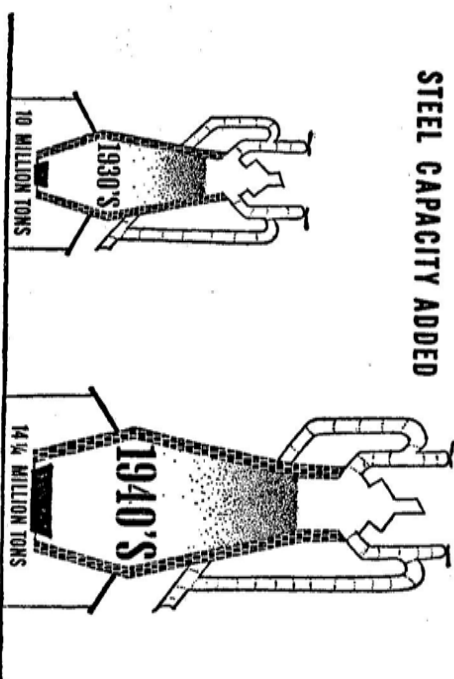
And that indeed is the impression my ingenious little chart gives. While saying "twice," I have left the lasting impression of an overwhelming eight-to-one ratio.

You'll have trouble pinning any criminal intent on me, too. I am only doing what a great many other people do. *Newsweek* magazine has done it—with moneybags at that.

The American Iron and Steel Institute has done it, with a pair of blast furnaces. The idea was to show how the industry's steelmaking capacity had boomed between the 1930s and the 1940s and so indicate that the industry was doing such a job on its own hook that any governmental interference was uncalled for. There is more merit in the principle than in the way it was presented. The blast furnace representing the ten-million-ton capacity added in the '30s was drawn just over two-thirds as tall as the one for the fourteen and a quarter million tons added in the '40s. The eye saw two furnaces, one of them close to three times as big as the other. To say "almost one and one-half" and to be heard as "three"—that's what the one-dimensional picture can accomplish.

This piece of art work by the steel people had some other points of interest. Somehow the second furnace had fattened out horizontally beyond the proportion of its

STEEL CAPACITY ADDED



Adapted by courtesy of STEELWAYS.

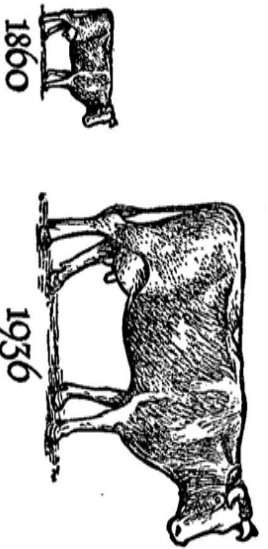
neighbor, and a black bar, suggesting molten iron, had become two and one-half times as long as in the earlier decade. Here was a 50 per cent increase given, then drawn as 150 per cent to give a visual impression of—unless my slide rule and I are getting out of their depth—over 1500 per cent. Arithmetic becomes fantasy.

(It is almost too unkind to mention that the same glossy four-color page offers a fair-to-prime specimen of the truncated line graph. A curve exaggerates the per-capita growth of steelmaking capacity by getting along with the lower half of its graph missing. This saves paper and doubles the rate of climb.)

Some of this may be no more than sloppy draftsmanship. But it is rather like being short-changed: When all the mistakes are in the cashier's favor, you can't help wondering.

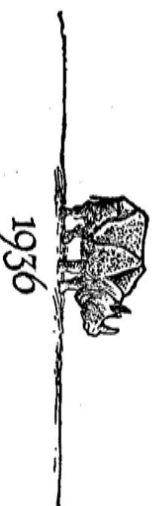
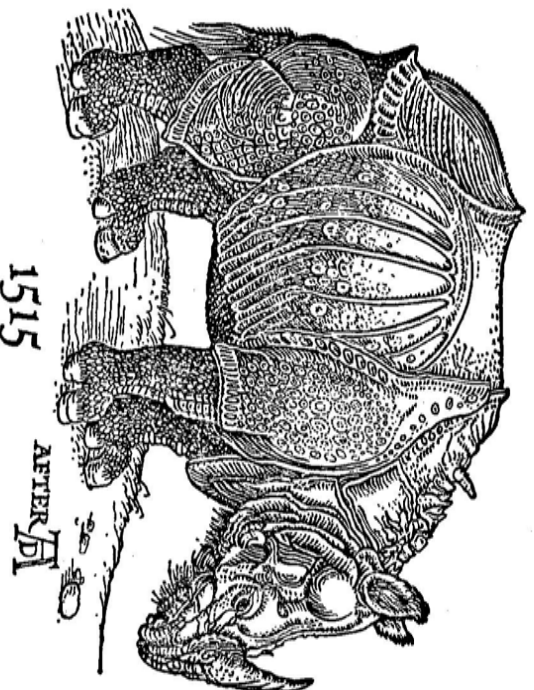
Newsweek once showed how "U. S. Old Folks Grow Older" by means of a chart on which appeared two male figures, one representing the 68.2-year life expectancy of today, the other the 34-year life expectancy of 1879-1889. It was the same old story: One figure was twice as tall as the other and so would have had eight times the bulk or weight. This picture sensationalized facts in order to make a better story. I would call it a form of yellow journalism. The same issue of the magazine contained a truncated, or gee-whiz, line graph.

THE CRESCIVE COW



There is still another kind of danger in varying the size of objects in a chart. It seems that in 1860 there were something over eight million milk cows in the United States and by 1936 there were more than twenty-five million. Showing this increase by drawing two cows, one three times the height of the other, will exaggerate the impression in the manner we have been discussing. But the effect on the hasty scanner of the page may be even stranger: He may easily come away with the idea that cows are bigger now than they used to be.

THE DIMINISHING RHINOCEROS



Apply the same deceptive technique to what has happened to the rhinoceros population and this is what you get. Ogden Nash once rhymed rhinosteros with preposterous. That's the word for the method too.